



U.S. Army Corps
of Engineers
Seattle District

Centralia Flood Damage Reduction Project Chehalis River, Washington FINAL ENVIRONMENTAL IMPACT STATEMENT

Appendix G: 404(b)(1) Analysis June 2003

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SECTION 404(b)(1) EVALUATION
CENTRALIA FLOOD REDUCTION PROJECT
CHEHALIS RIVER, WASHINGTON

1.0 Introduction

A final environmental impact statement (EIS), dated December 2002, was prepared to examine the environmental consequences of various alternatives for a Flood damage Reduction Project on the Chehalis River, Washington. The following evaluation was prepared pursuant to Section 404(b)(1) of the Clean Water Act in accordance with the guidelines promulgated by the Environmental Protection Agency (40 CFR 230) for evaluation of the placement of materials into waters of the United States. This 404(b)(1) evaluation assesses the placement of materials on prior converted wetlands within the study area of the Centralia Flood Damage Reduction Project

2.0 Description of Proposed Discharge

2.1 Need for Placement of Material.

The cities of Centralia, Chehalis and surrounding communities in Lewis and Thurston counties, Washington, have a long history of flooding and flood damage. Episodic flooding has caused extensive damage to private and public property and intermittent closure of critical transportation routes resulting in significant economic losses. The January 1990 flood, the second highest flood of record observed since 1929, alone caused an estimated \$19,189,000 in damages (PIE 1996). In closing transportation routes, the flooding also significantly disrupts emergency response by local governments, adversely affecting public safety. Without implementation of flood hazard reduction measures, actions, or projects, the area will continue to suffer from damaging floods. The local economy will continue to experience depressing economic effects due to the damages and uncertainty associated with future floods.

In addition, stream habitat functions of the Chehalis River and its tributaries have been damaged in the past due to development throughout much of the Chehalis River basin. This has resulted in the diminishment of the ability of the remaining habitat resources to adequately support sustainable fish and wildlife resources. Loss of wetlands, riparian areas, and back channels has also contributed to increased flooding in the area. The improvement of degraded areas along the Chehalis River or its tributaries can be a significant factor in sustaining and improving existing fish and wildlife resources in the Chehalis Basin. The restoring of floodplain functions will help in the restoration of stream habitat functions.

The purpose of the actions proposed by this study are to reduce flood hazards to the study area, which includes Centralia and Chehalis, as well as surrounding areas in Lewis and

Thurston counties, and to incorporate appropriate fish and wildlife habitat improvements. Flood hazards are defined as significant damage to existing structures, including private and public property, high risk to life, and extended closures of transportation corridors.

The proposed project would provide reductions in flooding along the Chehalis, Skookumchuck, and Newaukum rivers, and smaller tributaries, protecting the flood-prone areas near the cities of Chehalis and Centralia and the Town of Bucoda. The project aims to reduce damage costs in the project area and decrease the transportation closures during flooding on Interstate Highway 5 (I-5) and other critical transportation corridors. Additional objectives include avoiding increasing flood risks downstream of the project area and adverse impacts to the environment.

2.2 Location.

The study area for the authorized project includes the mainstem Chehalis River, its floodplain and tributaries from the South Fork Chehalis River confluence to Grand Mound, and includes the cities of Centralia and Chehalis, and surrounding areas in Lewis and Thurston counties in southwest Washington.

Tributaries entering the study area include the Skookumchuck and Newaukum rivers and numerous smaller creeks. The study area extends along the Skookumchuck River to a point upriver of Skookumchuck Dam and includes the Town of Bucoda in Thurston County.

2.3 Description of Placement Site.

Chehalis River ecosystems are a remnant of a once extensive system of braided channels, wetlands, and riparian areas across a broad floodplain. The river was an extremely dynamic system that carried a high load of organic materials (wood and other debris) with shifting channels. The wetland and riparian plant communities probably supported many of the same species found in the remnant systems today: shrub-shrub and emergent wetlands with evergreen and deciduous wetland and riparian areas along the higher flood terraces. These communities would be typical of a braided river system with frequently shifting stream channels. Functions associated with the historic wetlands would have included habitat for aquatic invertebrates, anadromous and resident fish habitat, wildlife habitat, export of organic matter, and biodiversity. Because of the dynamic nature of the riverbed (rapid erosion and sedimentation), plants found in this environment were likely to be highly adaptable and highly productive as primary producers. This would result in a rich food web supporting invertebrates and vertebrates. The Chehalis River system was likely a rich source of food for a vast variety of both fish and wildlife species. The richness of cultural resource sites around the study area indicates the river was also an important source of food and materials for Native Americans.

Euroamerican settlement brought dramatic changes to the system. Agricultural development resulted in the clearing and draining of all but the most difficult to access or drain wetland systems. Large areas of riparian forests were also cleared. LWD jams

historically were the principal mechanism that controlled river habitat diversity through the formation of scour pools, bars, in-channel islands, and riparian forests in the Pacific Northwest (Abbe 2000).

The historic records support the premise that LWD strongly influenced the hydrologic characteristics of the Chehalis floodplain areas of the basin. The removal of wood and the clearing of riparian vegetation have very likely changed the channel dynamics in this system. The mainstem appears to be undergoing a long-term trend of channel entrenchment since pre-settlement conditions, which likely began with the regular removal of woody debris. Woody debris removal resulted in concentrating river flow into one main channel. River transport of logs from logging operations also created conditions that further favored processes of entrenchment. Lastly, bank protection measures prevented (and continue to prevent) the mainstem from adjusting to flow events through channel changes.

Historic actions changed the Chehalis River wetland characteristics by reducing both the frequency and duration of low intensity flood events and by decreasing the ability of wetlands to store water. Draining wetlands and channelizing the river system decreased the ability of the entire system to store water (flood retention, groundwater discharge), to augment low flows and reduce summer temperatures (discharge cooler groundwater during the summer drought months) and to reduce the peak of flooding events. The Chehalis River system also lost biodiversity due to the loss and/or degradation of habitat and the loss and/or degradation of connectivity between habitats.

The impacts of the historic actions include loss of population and/or population isolation of many species (both plant and animal), loss of primary and secondary productivity, loss and/or degradation of fisheries habitat, loss of flood storage and low flow augmentation, and loss of biodiversity. Today, however, the Chehalis River ecosystem is still a relatively extensive complex of emergent, scrub-shrub and forested wetlands and riparian areas, as well as large area of agricultural wetlands that are actively cultivated during the spring and summer months. Much of the agricultural area of the floodplain has subsurface tiles and ditches to facilitate drainage. Some of the ditches and drains were successful in converting wetland areas into uplands, whereas other systems have failed, resulting in maintenance of wetland hydrology. The extent of either situation is difficult to determine without supporting field observations, although the Soil Survey for Lewis County (USDA 1987) has mapped large units of hydric soils throughout the study area, including the areas currently under cultivation.

Interspersed with the wetland complexes are equally large areas of well-drained soils. This complex variety of soils is a result of the glacial-fluvial history of the area, which was historically part of a broad glacial outwash plain and is currently part of an active floodplain.

The Chehalis River wetlands are supported by a combination of high seasonal water tables, periodic flooding, and seasonal ponding. Those areas directly adjacent to the river

probably experience both high seasonal water tables and periodic flooding. The areas away from the river likely are a result of high seasonal water tables and ponding.

The Chehalis River riparian areas are located in parts of the floodplain that are regularly inundated by floodwaters. Some of the riparian areas may also be wetlands, whereas others, located on the well-drained soils, are not inundated long enough to support wetland vegetation.

Functions likely provided by these wetlands include sediment and nutrient removal, peak flow reduction, base flow support, shoreline stabilization, primary production and organic export, fish and wildlife habitat, and native plant richness. Functions associated with the riparian systems include habitat for passerine birds, small mammals, amphibians, LWD supply, and native plant richness.

2.4 Methods of Placement.

Material will be placed using heavy equipment such as a large shovel, dump trucks and excavator.

2.5 Schedule.

The plan is to begin construction fiscal year 2003 and is expected to be completed by September 30, 2008.

2.6 General Characteristic and Quantity of Material.

The proposed project for the levees consists of constructing approximately 15.4 miles of new material.

2.7 Source of Material.

Material will be acquired from local quarries and must past U.S. Army Corps of Engineers Specifications.

3.0 Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem.

3.1 Substrate.

The site proposed for placement of the levee material is prior converted wetlands that are now used for agriculture purposes. There will be some disturbance to the substrate that surrounds the levee when the material is placed into the

original footprint. The proposed placement of levee material is expected to have little or no additional impact on the substrate or aquatic ecosystem.

3.2 Water Quality.

In review, construction related soil disturbances and potential effects from turbidity and suspended solids would likely be a temporary unavoidable impact. The introduction of sediments should be minimized through levee design and the implementation of an erosion plan. Potential long-term unavoidable adverse effects of operation and maintenance of the preferred alternative may include increased runoff and increased sedimentation. However, these effects should also be minimized by the setback levee design. There would be no contamination to the public water supply nor would contaminants be discharged into the river. Furthermore, proposed ecological mitigation and restoration activities have the potential to improve long-term water quality.

3.3 Current Patterns and Water Circulation.

Short-term impacts to water quality from the preferred alternative would be primarily construction related. Levee construction would involve disturbance of soil that could impact water quality if sediments are introduced into streams. This could result in temporary increases in turbidity, suspended solids, and biostimulatory nutrients within and downstream of the project area. Several water bodies within the project area are currently included in the current Section 303(d) list for water body segments that do not meet state surface water quality standards for fecal coliform and temperature. This designation requires that no activity shall occur that will cause an increased effect on the listed water body's impairment and includes activities that may have either temporary or long-term water quality impacts. While the preferred alternative should not increase fecal coliform loading, the levee design could result in impacts to riparian areas. Evidence indicates that significant removal of riparian shading contributes to elevated water temperatures. Existing information indicates that construction of several smaller sections of levees around the Skookumchuck River within the City of Centralia would result in the loss of 0.8 acre of riparian habitat where the levees would transverse two riparian areas adjacent to I-5. Functions associated with riparian areas, including shading for cooler water temperatures may be lost or adversely impacted. The Corps will continue to evaluate measures during the design process, including further refinement of the project design, in order to avoid direct impacts to riparian areas.

3.4 Salinity Gradients.

Not applicable.

4.0 Potential Impacts on Biological Characteristics of the Aquatic Ecosystem

4.1 Threatened and Endangered Species.

The following species appear on the List of Endangered and Threatened Wildlife and Plants, as authorized by the Endangered Species Act of 1973. These species have been identified as potentially occurring in the study area:

2. Bald eagle (*Haliaeetus leucocephalus*) (threatened)
3. Marbled murrelet (*Brachyramphus marmoratus*) (threatened) and designated critical habitat
4. Northern spotted owl (*Strix occidentalis caurina*) (threatened) and designated critical habitat
5. Coastal/Puget Sound population segment bull trout (*Salvelinus confluentus*) (threatened)
6. Canada lynx (*Lynx canadensis*) (threatened)
7. Gray wolf (*Canis lupus*) (endangered)
8. Grizzly bear (*Ursus arctos*) (threatened)
9. Kincaid's lupine (*Lupinus sulphureus kincaidii*) (threatened)
10. Golden paintbrush (*Castilleja levisecta*) (threatened)

Candidate species:

11. Oregon Spotted Frog (*Rana pretiosa*)
12. Whulge's Checkerspot (*Euphydryas editha taylori*)
13. Mardon Skipper (*Polites mardon*)

Federal species of concern include California wolverine (*Gulo gulo luteus*), Pacific fisher (*Martes pennanti pacifica*), western pocket gopher (*Thomomys mazama*), Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*), long-eared myotis (*Myotis evotis*), long-legged myotis (*M. volans*), western gray squirrel (*Sciurus griseus*), Northern goshawk (*Accipiter gentilis*), peregrine falcon (*Falco peregrinus*), olive-sided flycatcher (*Contopus cooperi*), Pacific lamprey (*Lampetra tridentata*), river lamprey (*L. ayresi*), Columbia torrent salamander (*Rhyacotriton kezeri*), Van Dyke's salamander (*Plethodon vandykei*), Larch Mountain salamander (*Plethodon larselli*), Cascades frog (*Rana cascadae*), tailed frog (*Ascaphus truei*), western toad (*Bufo boreas*), valley silverspot (*Speyeria zerene bremeri*), tall bugbane (*Cimicifuga elata*), white-top aster (*Aster curtus*), and pale larkspur (*Delphinium leucophaeum*).

Finally, several state-listed species of concern include the great blue heron (*Ardea herodias*), bufflehead (*Bucephala albeola*), wood duck (*Aix sponsa*), osprey (*Pandion haliaetus*), band-tailed pigeon (*Columba fasciata*), and western pond turtle (*Clemmys marmorata*). The Olympic mud minnow (*Novumbra hubbsi*) is a state candidate species. Endangered Species Act Section 7 consultation has been initiated with USFWS.

A biological assessment has been transmitted to the USFWS for their review and concurrence has been received. Determinations for bald eagle and bull trout are not likely to adversely effect. The remaining species determinations are no effect. There would be no substantial disruption, loss, or degradation of riparian, shoreline vegetation, connectivity, wetland hydrology or vegetation within the proposed project area.

4.2 Aquatic Food Web.

Recolonization of organisms damaged by the placement of levee material is usually rapid after completion of the project. Whatever disruption occurs to the food web, as a whole will be relatively short-lived as organisms become newly established after the disruptive events.

4.3 Wildlife.

The mainstem of the Chehalis has poor wildlife habitat because of inadequate off-channel habitat and wetlands. Riparian habitat along the mainstem of the Chehalis River has been largely lost through various land use practices or processes resulting in a limitation of riparian habitat to narrow bands along tributaries and around confluences. By 1938, significant changes had already occurred due to conversion to agricultural fields making it difficult to determine what habitats have been lost. Along the South Fork of the Chehalis River riparian vegetation is rated poor for 70 percent of the sub-basin and is particularly sparse in the mid and lower reaches. This lack of riparian vegetation compounds the forest connectivity loss that is present along the entire length of the Chehalis River within the project area. The smaller tributaries such as Salzer Creek, China Creek, Big Hannaford Creek, and Elk Creek are also lacking in riparian vegetation. It has been suggested that before development of this area into agriculture farmlands and residential development, the area consisted of predominately bottomland hardwood forest, indicative of a floodplain for this area. No mature forests exist within the project area.

By combining the levee construction and dam modifications there will be no additional impacts to the marginal wildlife habitat that currently exist in the project area other than wetland impacts. However, there is potential to have a positive effect on wildlife by creating additional wetlands, connectivity, and additional riparian zones. There will be no loss in remaining habitat connectivity, riparian habitat or remaining functional wetlands. Impacts to wetlands will be on the marginal converted wetlands that are now used for farming.

5.0 Potential Impacts on Special Aquatic Sites

The proposed project will not adversely impact marine sanctuaries (designated under local ordinances, state and/or local laws), mudflats, vegetated shallows or riffle and pool complexes

6.0 Potential Effects on Human Use Characteristics

6.1 Recreational and Commercial Fisheries.

Riparian plantings and wetland creation conducted as a part of the preferred alternative would not preclude or eliminate any recreational opportunities post-construction. The visual impact of levee construction will occur temporarily, but this is not expected to be a significant effect on the long-term aesthetics of the project area.

6.2 Aesthetics.

The proposed actions will not adversely impact aesthetic qualities of the project area.

6.3 Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves.

Schaefer County Park. Located along the Skookumchuck River approximately 2 miles north of Centralia on SR-507, Schaefer Park covers approximately 14 acres. It provides picnicking, designated swim areas, covered shelter, hiking, a volleyball court, a playground, fishing, horseshoe pits, and group picnic area. The park contains riparian wetlands associated with the Skookumchuck River. Half the park has trails, which pass through alder and vine maple forests near the river and its backwaters. River-associated wildlife includes muskrat and beaver.

Fort Borst Park. Fort Borst Park is one of the most developed parks in the region. Centered on the Historic Borst Family Homestead, the park has a variety of recreation opportunities, including fishing, swimming, picnicking, nature study, bird watching, boating, and hiking. Facilities include fields for soccer, softball, and baseball, tennis courts, horseshoe pits, volleyball courts, picnicking areas, an arboretum, a boat launch, historical Borst Home and Fort Borst Blockhouse, community kitchens, playground, and the Centralia Parks and Recreation Office.

Rotary-Riverside Park. Situated off Harrison Avenue along the Skookumchuck River, this park offers a campground, picnicking areas, fishing, horseshoes, outdoor shelter, a playground, soccer and baseball fields, a fitness trail, and natural area.

Stan Hedwall Park. This regional park totals 202 acres in size. The developed portion of the park is 111 acres and includes a little league complex with four fields, a playground, two full-sized baseball fields, four softball fields, soccer fields, a 29-unit campground with hook-ups, a nature study area, picnicking areas, and a community kitchen. The City of Chehalis has capital improvement projects slated for Stan Hedwall Park over the next 20 years (City of Chehalis 1999).

Westside Park. This 0.9-acre park in Chehalis provides a children's play area, basketball courts, and picnic shelters.

Duffy Park. There is a demonstration forest that was logged and replanted in 1993 and 1994 and a trail system in this 4.5-acre park.

Millett Field. There are 3.3 acres at Millett Field, which include an open play field, a tennis court, basketball court, and a small natural area.

Recreation Park. There are 12 developed acres at this park. There is a playground, a community kitchen, a softball complex, outdoor swimming pool, and several picnic shelters. Sixteen improvement projects are planned for the next 20 years.

McFadden Park. McFadden Park covers 28 acres and offers open space for hiking, bird watching, and nature study.

Dobson Park. Dobson Park covers 26 acres located along the Chehalis River across from and adjacent to the confluence of the Newaukum River. The park has trails and a scout lodge, which is currently not used.

Other parks in the Centralia and Chehalis area include:

14. Cedar Street Park
15. Alexander Park
16. Wilbur Parkins Park
17. Seminary Hill Natural Area
18. Central Park
19. Ed S. Mayes Park
20. Logan Community Park
21. Plummer Lake Boat Launch

None of the parks will be affected by the project.

7.0 Evaluation and Testing of Discharge Material.

7.1 Evaluation of Chemical-Biological Interactive Effects.

7.1.1 Exclusion of Material from Testing.

NA

7.1.2 Water Column Effects.

NA

7.2 Comparison of Excavation and Discharge Sites.

7.2.1 Total Sediment Chemical Analysis.

A sediment chemical analysis was not required for the levee construction.

7.2.2 Biological Community Structure Analysis.

A community structure analysis was not considered necessary.

8.0 Factual Determinations.

8.1 Physical Substrate.

Due to its similarity to the existing substrate and the absence of major sources of contamination, placement of the levee material will have minimal impact on the area substrate.

8.2 Water Circulation, Fluctuation, and Salinity Determinations.

No significant changes in water circulation are expected from the proposed project.

8.3 Aquatic Ecosystem and Organisms Determinations.

The project will not have significant adverse effects on the aquatic ecosystem and organisms. Placement of levee material may temporarily reduce populations of sessile epifauna and infauna, thereby reducing their contributions to the aquatic food web temporarily.

8.4 Determination of Cumulative Effects on the Aquatic Ecosystem.

Anticipated impacts will be minimal, localized, and limited to the project site. Thus, it is determined that levee construction will not contribute significantly to any cumulative effects on the Chehalis River aquatic ecosystem.

8.5 Determination of Secondary Effects on the Aquatic Ecosystem.

It is determined that the project will not result in any significant secondary effects on the Chehalis aquatic ecosystem.

9.0 Proposed and Alternative Actions to Minimize Adverse Effects.

This project has been designed to minimize adverse effects on the aquatic environment. Extensive coordination with local, state, federal and tribal agencies has occurred throughout the project design and implementation process.

9.1 Actions Concerning the Location of the Discharge.

NONE.

9.2 Actions Concerning the Material to be Discharged.

None.

9.3 Actions Controlling the material After Discharge.

None

9.4 Actions Controlling the Method of Dispersion.

None

9.5 Actions Related to Technology.

None

9.6 Actions Affecting Plant and Animal Populations.

Construction of the levee will be accomplished using mechanical equipment that is less likely to harm juvenile Salmonids or terrestrial species. The EPA in consultation with the WDE, in accordance with section 401 of the Clean Water Act, should be able to issue a Water Quality Certification. The certification will include conditions to minimize adverse effects to the aquatic ecosystem. Those conditions that will be set forth in the Water Quality Certification are herein incorporated by reference.

9.7 Actions Affecting Human Use.

The initial placement of levee material will limit the public access. During this time, the aesthetics of the area will be somewhat diminished during construction.

10.0 Analysis of Practicable Alternatives.

No alternative other than the recommended plan was found to meet the objectives of the project in a manner that was effective, cost effective, and publicly acceptable.

10.1 No Action.

With no action, the area will continue to flood and cause not only damage to structures but continued loss of habitat. Therefore, the No Action alternative is not acceptable.

11.0 Review of Conditions for Compliance.

11.1 Availability of Practicable Alternatives.

There are no practicable alternatives available for this action that would have less adverse impact on the aquatic environment.

11.2 State Water Quality Standards and Federal Toxic Effluent Standards (section 307 of the Clean Water Act).

The EPA has certified that the proposed discharges of fill and dredged material are in compliance with Sections 301,302,303,306, and 307 of the Federal Water Pollution Control Act as amended (Clean Water Act). The proposed project is subject to compliance with several provisions of the Water Quality Certification. Based on the fact that no sources of contamination exist upstream of the proposed project site, it was determined that no contaminants would be released at the project site that would result in unacceptable adverse effects on the project site biota. Therefore, the proposed project is considered to be in compliance with applicable federal environmental requirements and state water quality standards.

11.3 Threatened and Endangered Species (ESA of 1973).

Endangered Species Act Section 7 consultation has been initiated with USFWS. A biological assessment has been transmitted to the USFWS for their review and concurrence has been received. Determinations for bald eagle and bull trout are not likely to adversely effect. The remaining species determinations are no effect. There would be no substantial disruption, loss, or degradation of riparian, shoreline vegetation, connectivity, wetland hydrology or vegetation within the proposed project area. There has been no additional species added nor has the project changed significantly enough to warrant a return to a Biological Assessment.

11.4 Marine Sanctuaries (Marine Protection, Research, and Sanctuaries Act of 1977).

No impacts to this sanctuary are anticipated from this project.

11.5 Coastal Zone Management Act of 1972 and Shoreline Management Act Consistency.

The project is consistent to the maximum extent practicable with enforceable policies of the approved shoreline management program.

11.6 Potential for Significant Degradation of Water as a Result of the Discharge of Polluted Material.

No contaminants are expected to be released that would significantly affect human health, the aquatic ecosystem, wildlife, or any activities in the area.

11.7 Steps to minimize Potential Adverse Impacts on the Aquatic Ecosystem.

All appropriate and practicable steps, including scheduling the timing of the levee construction, and adhering to established water quality criteria, that will minimize potential adverse impacts of the project on the aquatic ecosystem, have been incorporated into the proposed project.

12.0 Findings.

Based on the information provided in paragraphs 2 through 11 above, Seattle District has determined that the proposed levee construction and dam modification includes practicable steps to minimize impacts to the aquatic environment, and that there is no

practicable alternative to the proposed project that would have less impact on the aquatic environment. Therefore, Seattle District has determined that the proposed project complies with the Clean Water Act, Section 404 (b)(1) guidelines.